

Education Technology in North Dakota Schools

Connections for Improved Student Learning

October 2002

Governor Hoeven has identified six pillars for building our future in North Dakota:

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|------------------------|---------------|-------------------|
| ◆ Education | ◆ Agriculture | ◆ Technology |
| ◆ Economic Development | ◆ Energy | ◆ Quality of Life |

“Education is the bedrock on which we build the future. Excellence in education will enable us to achieve our greatest potential, as individuals and as a state. Schools produce the human wealth on which our progress depends.”

“Technology links people and businesses, schools and government, in ways never before seen, creating vital new opportunities for all our people.”

K-12 education uses information technologies to achieve its mission in two distinct ways: the use of technology in the curriculum to support student learning in courses such as math, science, English and social studies, and administrative applications such as accounting and student data systems. The development and use of state technology systems such as STAGEnet often support both administrative and educational applications creating efficiencies at all levels.

Funding of technology in K-12 education is a combination of local, state and federal resources. State and federal funding are often attached to specific programs that have separate requirements, so coordination of all technology related programs and funding in order to achieve effective use and resulting efficiencies is an increasing challenge.

This report is intended to provide education stakeholders with a snapshot of K-12 initiatives in North Dakota schools. The report was developed by the North Dakota Educational Technology Council, which was reorganized by the 2001 ND legislature in order to better coordinate K-12 technology activities in the state.

There are four sections in this report:

1. Summary of major K-12 technology initiatives in ND supported by local, state and federal funds.
2. Description of 2001-02 accomplishments of the North Dakota Educational Technology Council, ND ITD, and the service providers which now report to the ND ETC: the ND Division of Independent Study (NDIS) and EduTech (formerly Sedit Technology Services and Center for Innovation in Instruction).
3. Summary of April 2002 ETC School Technology Needs Assessment.
4. 2003-2005 Goals and Strategies developed by ND ETC, NDIS and EduTech.

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Local, State and Federal Funded K-12 Initiatives in North Dakota

Elementary and secondary education in North Dakota is funded through a mix of local, state and federal sources. Education technology initiatives in schools are also supported through a combination of funding sources. This is a brief summary of education technology projects currently operating in North Dakota, funded through local, state and federal education programs and grants.

Local Technology Initiatives and Funding

Results from the April 2002 ETC needs assessment survey indicate that the most significant source of education technology funds for K-12 schools is local - - general operating budgets, technology mill levy and other local resources. These local funds support upgrading and replacement of computers, network infrastructure and other hardware; software licenses; school personnel and outsourcing of technical support and maintenance, professional development, student information systems such as Power School, and operation of classrooms and other resources required for sharing courses using video networking. To support school technology initiatives, North Dakota schools have become accustomed to supplementing local funds with state and federal funds and grants from other sources.

State Technology Initiatives and Funding

School Connections to STAGEnet. The 2001 ND legislature appropriated funds to pay for an ATM T1 connection and Internet access for each high school in the state. Cost for the first two years has been \$4.2 million. An annual cost in subsequent years is estimate to be \$1.85 million. This initiative has been highly successful in achieving several goals involved in getting all schools on a common network and has also been very popular with schools.

The ND Educational Technology Council was funded by the 2001 legislature to coordinate technology in elementary and secondary schools and to make grant funds available to schools for high priority initiatives. Details of how ETC grant funds were distributed are found in the second section of this report. The ETC 2001-03 appropriation was \$1.2 million. Over \$980,000 was distributed to schools.

EduTech (formerly C.I.I. and STS). The Center for Innovation in Instruction and Sendit Technology Services were brought under the ND ETC beginning July 2001. In early 2002 they merged into a single organization called EduTech, to provide infrastructure and network resources as well as professional development for K-12 administrators, teachers and technology coordinators. The 2001-03 EduTech budget is \$2.4 million.

Continued: State Technology Initiatives and Funding

The North Dakota Division of Independent Study (NDIS) provides elementary, middle, and high school courses through print-based, web-based, and video delivered distance education. More than 75 NDIS courses are available in an online format. All courses required to complete four years of high school and receive a State of North Dakota diploma are available online. In 2001-02, 1,305 North Dakota students took courses through NDIS. Seventeen percent of the NDIS total budget comes from a general fund appropriation; the remainder of the budget is generated through tuition and charges for services.

The State Board for Vocational/Technical Education provides funding to secondary schools for eight vocational programs including three that prepare students for work or further study in technology fields: Technology Education, Business and Office Technology and Information Technology. The majority of students in technology education programs are in junior and middle schools, providing them with exposure to a wide scope of technology applications and systems and engineering and design skills. Business and Office Technology courses prepare students to work with standard business hardware and software as well as to produce finished work commonly required in business settings. The Information Technology career cluster includes IT Essentials, programming, A+, CCNA, operating systems and others. The IT career cluster spans grades 7 through post-secondary. Annually, over \$900,000 of state funds support these three programs and over \$350,000 of federal Perkins III funds are used to purchase equipment in schools.

IVN. The 2001-03 budget for the North Dakota Interactive Video Network includes \$1.6 million to support K-12 video networking including bridging, scheduling, interconnectivity to existing consortiums and support personnel. Three new video bridges were purchased to bring the port capacity to 102 simultaneous video sites. That capacity will soon double. In addition to scheduling all high school courses being carried on H.323, IVN also schedules the courses for SPICE, a new MPEG-2 consortium. H.323 gateway equipment was purchased to connect all the existing ITV systems to STAGEnet. In addition, IVN works with ND ITD and EduTech on K-12 video network planning, implementation, training and support activities.

ODIN. The 2001-03 appropriation to the ODIN library system includes \$260,000 to purchase a two-year statewide license for "Electric Library" for use by more than 400 K-12, public and academic libraries. The statewide license represents a 500% savings based on the costs of individual site licenses. Electric Library is an online collection of popular magazines and scholarly journals, newspapers and news wire services, television, radio and congressional transcripts, photographs, maps, and reference and historical resources. Since September 2001, North Dakota K-12 schools libraries have connected with Electric Library over 91,000 times and retrieved 330,000 articles. Eighty-nine percent of the traffic is from ND K-12 schools.

The Technology Academy for School Leaders (TASL) is a series of four professional development modules that cover skills and knowledge important to school superintendents and building principals. The three-year project is supported by a combination of state funds appropriated to EduTech (C.I.I.) and a grant from the Bill and Melinda Gates Foundations. Topics covered are ND STAGEnet including access, tools, and services; technology for productivity and professional practice; technology leadership, and assessing technology progress and evaluating results. To date 166 school leaders have completed all the TASL requirements. By the end of the project in 2004, over 600 administrators are expected to complete the academy.

Federal Technology Initiatives and Funding

Perkins III – Vocational Education Funds. The State Board for Vocational/Technical Education annually receives federal Perkins III funds to provide resources to schools offering courses aimed at career preparation. In the current year, Perkins III funds totally \$17 million are matched with \$13 million in state funds to help support all vocational education programs in North Dakota schools. More information about the Technology Education, Business and Office Technology and IT Career Cluster is included in the “State Technology Initiatives and Funding” section.

E-Rate – Universal Service Funds. North Dakota will receive discounts up to \$2.8 million in 2002-03 from the federal E-Rate program to pay for part of the cost of providing STAGEnet connectivity and Internet access to all North Dakota high schools. It is anticipated that the federal E-Rate program will be continued in future years and will continue to provide a discount to the state for school connectivity. In addition to the funding received by the state for the K-12 connections, individual schools also apply for E-rate funds for other telecommunications services. North Dakota schools received \$2.6 million in E-Rate discounts in 2002-03.

School Renovation, IDEA and Technology Grants were awarded by DPI in 2002 with one-time federal funds from the US Department of Education. \$1.1 million was awarded to over 75 North Dakota schools for implementing video classrooms. The award amounts were coordinated with ND ETC funds to provide a minimum \$19,500 award to schools that had no video classrooms. This federal program no longer exists, so no future funding for technology in schools will be available from this source.

Technology Literacy Challenge Funds were awarded in 2002 by DPI to eight North Dakota schools in the Northern Red River ITV Cooperative for converting their existing analog fiber ITV system to H.323 video and adding one new school member. TLCF funds were also awarded to the Central Dakota and SPICE consortiums to enhance their H.323 connectivity. Total awarded by DPI with remaining TLCF funds was \$200,000. The federal TLCF program has been discontinued and replaced by the Title IID, “Enhancing Education Through Technology” program of the new ESEA.

Continued: Federal Technology Initiatives and Funding

Title II D, “Enhancing Education Through Technology” of the No Child Left Behind Act is the only US Dept. of Education title program specifically for funding education technology in schools. The annual North Dakota allocation is \$2.9 million, one half paid directly to schools on a formula based on the number of high-need students. The remaining \$1.45 million will be awarded later this year by DPI in the form of competitive grants to schools with high numbers of students in need. These funds are expected to be available on an annual basis, but will be specifically targeted to high-need schools.

In addition, DPI is implementing a student information warehouse, analysis and reporting tool called TetraData. This application will be deployed to all schools in three phases in the next year, beginning with the six largest districts. DPI is using funds from Title 6 of the new federal ESEA Act, No Child Left Behind.

The North Dakota Teaching with Technology Initiative (TWT), funded by a federal grant, is beginning its fifth and final year of implementation. TWT has provided professional development for over 9,000 teachers and administrators in over 90% of ND schools in TWT Phase I. About 50% of teachers chose to advance to Phase II. Phase III will begin in January 2003 and will engage school leadership in professional development activities aimed at involving the entire school staff in appropriate educational technology integration activities. A team of seven Regional Educational Technologists (RETs) implement TWT statewide. A standardized assessment instrument being used by TWT has shown significant gains being made by participating teachers in core technology skills; curriculum, learning and assessment practices, and classroom and instructional management. The Technology Innovation Challenge Grant program that has funded TWT since 1998 has been discontinued by the US Department of Education.

North Dakota Education Technology Accomplishments: 2001-2002

The 2001 North Dakota Legislature reorganized the North Dakota Educational Technology Council (ND CC 54-59). The ND ETC is responsible for coordinating educational technology initiatives for elementary and secondary education. The Educational Technology Council replaced the Educational Telecommunications Council that operated with a similar, but limited role since 1989.

K-12 Technology Accomplishments related to the Goals in the Statewide Information Technology Plan 2000

The *Statewide Information Technology Plan 2000* identified a vision for information technology in North Dakota State Government. "State government should be customer focused, efficient, well managed, and provide leadership for developing a shared infrastructure." Several of the goals and strategies in the State IT Plan involved K-12 education and the role of the ND ETC. Schools, the ND ETC and other state agencies have done much to accomplish the goals and strategies identified in the 2000 plan.

Vision Component: State government should be customer focused.

Goal: Promote "Anytime, Anywhere" Education

Strategies: ETC Leadership for K-12
Additional K-12 interactive video consortiums

Strategy: The Educational Technology Council (ETC) will provide IT leadership and coordination of the various supporting entities for K-12.

The 2001 legislature moved the ND ETC from the Department of Public Instruction to the ND Information Technology Department in order to facilitate better coordination between all of the state technology initiatives. The ETC budget and appropriation were also moved from ND DPI and are line items in the ITD 2001-03 general fund budget.

The ETC has twelve members representing groups that are stakeholders in K-12 educational technology. The governor appointed seven of the ETC members. The ETC hired a Director of the ETC who serves as the State Director of K-12 Technology. The State Director of K-12 Technology also oversees the activities of three of the state's education technology service providers: Center for Innovation in Instruction, Sendit Technology Services, and Division of Independent Study. These service providers were moved under the ND ETC by the 2001 legislature. Their general fund budgets were also moved to the ND ITD budget.

The Center for Innovation in Instruction (C.I.I.) is responsible for professional development of K-12 administrators and teachers. The specific focus of C.I.I. professional development is the use of instructional technology to improve teaching and learning. C.I.I. trains educators to integrate the use of appropriate technology resources in all curriculum areas.

During the 2001-03 biennium, C.I.I. operates under a memorandum of understanding between ND ITD and Valley City State University where C.I.I. offices are located. The MOU outlines the professional development services C.I.I. renders to the state's public schools and the financial relationship between C.I.I. and ITD.

Sendit Technology Services (STS) is responsible for technical services and support of the state's K-12 wide area network. Major services include email, email list, web page and online course hosting, and software/hardware discounts. Support provided by STS includes help desk, LAN/WAN resource planning, and regional information technology specialists to work in schools to provide customized support and information.

During the 2001-03 biennium, STS operates under a memorandum of understanding between ND ITD and North Dakota State University where STS main offices are located. The MOU outlines the technical services and support STS renders to the state's public schools and the financial relationship between STS and ITD.

C.I.I. and STS merged their two organizations beginning July 1, 2002. The name of the new organization is "EduTech." This reorganization was done in order to better align services, better meet the needs of K-12 schools and to facilitate providing more regional support for IT systems and education technology applications in North Dakota schools.

The North Dakota Division of Independent Study (NDIS) provides elementary, middle, and high school courses through print-based, web-based, and video delivered distance education. More than 75 NDIS courses are available in an online format. All courses required to complete four years of high school and receive a State of North Dakota diploma are available online. In 2001-02, 1,305 North Dakota students took courses through NDIS. In addition to students in North Dakota, NDIS students live in 49 other states and 38 foreign countries. Seventeen percent of the NDIS total budget comes from a general fund appropriation; the remainder of the budget is generated through tuition and charges for services.

NDIS employs 19 certified teachers and 21 administrative and support staff. As of August 1, 2001, all NDIS staff became employees of ND ITD. Prior to July 1, they were employees of ND DPI. NDIS provides office space and administrative support for the State K-12 Technology Director.

As part of an ETC funded pilot project, the ND Division of Independent Study is offering a two-semester Spanish course to 39 North Dakota high school students in seven schools during the 2002-03 school year. The Spanish course uses a combination of web-based activities on Tuesdays and Thursdays and live video interaction on Mondays, Wednesdays and Fridays.

Under the umbrella of the ND ETC, EduTech (CII/Sendit), NDIS and ETC staff began providing leadership for development of the program of the annual Teaching and Technology Conference. The conference is attended by 800 educators and will begin

rotating from its traditional site in Bismarck to a site in eastern North Dakota. TNT 2003 is scheduled for Grand Forks, June 9-12.

In 2002 the ND ETC took on the responsibility for leading the state application for E-rate reimbursement for the cost of providing T1 connections and Internet access to all North Dakota high schools. In addition to serving as signatory and the contact person for the state's 2002 E-rate application, the director of the ND ETC brought together a team of statewide leaders who will work together to develop the state's future E-rate applications.

As part of the new responsibilities of the ND ETC, the director began a process to revise the state's educational technology plan by convening a broad based group of education stakeholders. The revised state educational technology plan is used to guide the implementation of educational technology systems in the state and is also required in order for the state to apply for certain federal funds such as US Dept. of Education technology funds and E-rate funding.

In early 2002, ETC worked with ITD and Prairie Public Broadcasting (PPB) to provide support funding for Prairie School Television (PSTV) services. PSTV broadcasts curriculum related video programs on Public Television for use in K-12 schools. In the past, PSTV services have only been available to schools that paid an annual membership fee based on the total number of students in each school. In consultation with the ETC, ITD awarded \$75,000 to PPB for support of PSTV programming for 2002-03. Specifically, the funds are used to pay statewide license fees for PSTV television programs so that all ND public schools can receive, record and use the programs in the classroom. Results of making this a free service to ND schools will be analyzed and if appropriate, support funding will be sought for the same services in 2003-05.

Strategy: K-12 districts should form additional interactive video consortiums. The ETC should target grant funding to provide the necessary equipment.

In April 2002 the ND ETC awarded grants to 78 schools in six consortiums for purposes of implementing video networking for sharing courses. The ETC grants were coordinated with federal grant programs administered by DPI. In total, over \$2,130,000 was awarded in 2002 to North Dakota schools for purchasing video classrooms through the ETC and DPI grants programs.

Of the 157 school sites that now have video networking capabilities, 99 are using H.323 IP video transmitted on STAGEnet. In addition, 21 of the 33 school sites in the Great Western analog ITV network have added new H.323 classrooms or conference rooms to their existing video networking capabilities. H.323 gateways are being installed in all existing video consortiums (analog, MPEG-2 and ITFS), allowing them to participate in IP video teleconferences.

The 157 school sites with video networking capabilities are organized in 11 consortiums:

Great Western Network	33 sites	Analog on fiber (21with H.323 also)
Central Dakota	8 sites	Analog on ITFS/microwave
Great Northwest	16 sites	H.323 on STAGEnet
North Central	22 sites	H.323 on STAGEnet
e-Education	22 sites	H.323 on STAGEnet
Northern Red River	9 sites	H.323 on STAGEnet
Heart of the Valley	18 sites	H.323 on STAGEnet
NDIS	1 site	H.323 on STAGEnet
Standing Rock	3 sites	H.323 on STAGEnet
New Horizons	8 sites	H.323 on STAGEnet
Greater Southeast	12 sites	MPEG2 on fiber
SPICE	5 sites	MPEG2 on fiber

During the 2001-2002 school year, 68 K-12 school sites were using video to offer courses. As of fall 2002, 102 North Dakota high school sites are offering courses using video networking. Beginning January 2003, an additional high school sites will begin offering courses using video.

Fall 2002 statistics:

- 2,376 high school students are enrolled in 166 video courses
- 1,719 students in 119 courses – Existing ITV schools
- 657 students in 47 courses – New ITV schools

In addition, an average of 950 North Dakota students will complete a Division of Independent Study distance education high school course this semester – through print, web-based or video delivery.

Vision Component: State Government should be efficient.

Goal: Encourage Enterprise-wide Solutions

Strategy: Data warehouse tools and applications

Strategy: ITD, partnering with OMB, NDUS, and K-12 districts, will pursue and Enterprise Resources Planning (ERP) solution that will integrate the core financial and administrative applications of state government, higher education, and public education.

Beginning in 2001, ITD began working with Bismarck Public schools to implement a new student information system that is web-based and has potential to be offered as a service to other schools in the state. PowerSchool was identified through an RFP process and was implemented in Bismarck Schools during the 2001-02 school year. After further product refinement, PowerSchool was implemented in three additional schools by fall 2002. A total of 68 school districts have signed up and are scheduled to implement PowerSchool before the end of the 2003-04 school year. PowerSchool is

seen as an important K-12 administrative tool that can be integrated into the overall ERP solution as it develops over several years in state government, higher education and K-12 education.

PowerSchool is hosted by ITD in Bismarck for schools statewide. Schools pay an annual per pupil fee for use of the application and ITD support. EducTech (CII and Sendit) staff manage all PowerSchool implementation activities as well as training for administrators, support staff and teachers. In addition, EduTech (CII/Sendit) staff are assisting schools in converting their student data from their legacy systems to the PowerSchool database.

Vision Component: State Government should be well managed.

Goal: Coordinate Technology Research and Planning

Strategy: Initiate pilot projects

Strategy: ITD and NDUS will assess opportunities and initiate pilot projects employing leading edge technologies such as Internet access from hand-held devices, electronic business-to-business transactions, wireless broadband communications, voice over IP, or voice recognition.

In 2002 the ND ETC funded two pilot projects to begin using STAGEnet to offer additional learning resources to ND schools. The ND Division of Independent Study began offering two sections of a two-semester Spanish I course to 39 students in 7 ND high schools using a hybrid approach to distance learning. On Monday, Wednesdays and Fridays, the NDIS Spanish teacher and the 39 students interact synchronously using H.323 video networking. During the Tuesday and Thursday class periods, the students participate in asynchronous web-based learning activities developed by the NDIS Spanish teacher. This hybrid approach is being tested for effectiveness in student learning and efficiency of delivery. If successful, NDIS plans to offer more courses to ND students using this hybrid delivery approach.

Beginning in spring 2002 and continuing through the 2002-03 school year, the ND ETC funded the use of educational video clips that are accessed by teachers and students through the Internet. The streaming video services of United Learning are being tested in 10 school districts in the Great Western ITV Consortium and similar services of Digital Curriculum Corporation are being tested in 7 school districts in southeastern North Dakota. EduTech (CII/Sendit) facilitated the training for school personnel and is managing the pilot projects in the 17 schools.

Based on the results of these two pilot projects, the ND ETC will determine the effectiveness of using school local area networks and STAGEnet to provide this type of learning resource to teachers and students. In addition, ND ETC will assess teachers and students to determine what impact the use of streaming video has on student learning.

Vision Component: State Government should provide leadership for developing a shared infrastructure.

Goal: Integrate Broadband Network

Strategies: Connect every high school

Expand support services of ITD, Sendit, NDUS and Assoc. of Counties

Strategy: ITD will expand the statewide network to every public high school.

By the fall of 2001, broadband connectivity through STAGEnet was extended to all North Dakota public high schools. The 2001 legislature appropriated funds so that the connections to the high schools, as well as the Internet access fees for schools, are paid for by the state. In addition, ITD connected 25 of the state's 41 K-8 school districts (those without a high school building) in order to provide connectivity in as many of districts as possible.

Connecting all the schools to STAGEnet opened up several new opportunities for teachers and students beyond better and faster access to the Internet. Videoconferencing between schools for purposes of sharing courses, for meetings and for other communication is now possible for many schools that could not previously afford the high costs of dedicated leased lines. In addition, other applications can now be implemented on a statewide basis, for example, PowerSchool, a student information systems and Electric Library, now available to K-12 schools through the ODIN library system.

In rolling out STAGEnet to all ND schools, the ETC and EduTech (CII/Sendit) identified the need to manage the network appropriately in order to ensure that the network becomes a stable and reliable resource that schools can depend on as a mission critical tool. One key element of that support is computer virus protection. ND ETC and EduTech (CII/Sendit) provided over \$150,000 to fund the purchase of anti-virus software for all the K-12 school computers connected to STAGEnet. To date over 25,000 computers are protected through this plan and additional school computers are protected locally by schools using other anti-virus software. EduTech (CII/Sendit) staff manages the virus protection program statewide.

In order for schools to be in compliance with the federal Children's Internet Protection Act, Internet content must be filtered to limit access to Internet sites containing material of pornographic, violent and illegal activities. In addition to managing the statewide filtering system, EduTech (CII/Sendit) purchased and installed the two Internet filtering devices that serve all ND schools connected to STAGEnet and also purchased the \$2,500 annual fee for the daily filtered sites updates.

Strategy: Sendit Technology Services, ITD, NDUS and Association of Counties will expand their support services to meet the demands of the growing number of network users.

The role-out of STAGEnet to all K-12 schools created new demands for support of the increased number of users and new applications made possible through STAGEnet. The 2001 legislature provided funding to Sendit to place six support personnel in six regions of the state. In merging CII and Sendit services into EduTech, two former CII personnel were re-assigned so that EduTech now has personnel located in 8 regions, with offices across the state to provide better support to North Dakota schools.

During 2001-2002 the EduTech (CII/Sendit) regional staff have taken on a number of new support responsibilities based on increased numbers of network users and new applications using STAGEnet. Support services provided to schools by the eight EduTech (CII/Sendit) regional staff:

- Implementation of PowerSchool, student information system,
- Use of BlackBoard, online course development/delivery tool available through cooperative arrangement with NDUS,
- Development of video consortiums, implementation of videoconferencing technologies, and training of video network users,
- Implementation of virus protection software managed by EduTech (CII/Sendit),
- Appropriate use the Internet filtering system that is integral to K-12 STAGEnet,
- Consultation/trouble-shooting on local and wide area networking issues,
- Local representative for other EduTech (CII/Sendit) training, including basic technology training, application skills training and curriculum integration training,
- Local representative for other EduTech (CII/Sendit) services, including Lewis and Clark Resource Collection, school technology assessment and planning, email, web hosting, audio/video streaming and help desk.

EduTech staff has taken the lead in training administrators, support staff and teachers to use PowerSchool, the online student information system hosted by ITD. Ten EduTech staff received certification training on the teacher component of Power School on July 8 and 9, 2002. All 10 passed the certification tests. These staff were then observed by a PowerSchool master teacher in August to complete the certification. Six EduTech Staff receive certification training on the administrative component of PowerSchool in October 2002. Those same 6 will receive certification training on the scheduling component of PowerSchool in December 2002.

EduTech (CII/Sendit) manages statewide educational discounts on software through major companies such as Microsoft, Adobe and Macromedia. Schools may order desktop and other applications available through these discount programs for savings of up to 45% for Adobe and Macromedia products and 50 to 80% for Microsoft products.

Vision Component: State Government should provide leadership for developing a shared infrastructure.

Goal: Develop Workforce

Strategies: Strategy: Expand K-12 curriculum and technology training of teachers and administrators.

Strategy: The ETC, Center for Innovation in Instruction, and Sendit Technology Services will develop and promote programs that serve to expand curricula and technology training to the teachers and administrators who will integrate technology into K-12 classrooms.

EduTech (CII/Sendit) provided additional technology training for school administrators, school technology coordinators and teachers who use distance education technologies for course delivery. In 2001-02 EduTech (CII/Sendit) staff teamed with the ND Association of Technology Leaders (NDATL) to provide professional development opportunities for school technology leaders in Minot, Dickinson, Devils Lake, Fargo, Grand Forks, Beulah and Ellendale. A total of 510 attended, representing nearly 200 school districts. In addition five two-hour statewide IVN sessions were held to provide updates and troubleshooting. The 300 attendees represented over 100 school districts.

ND ETC and EduTech (CII/Sendit) worked with the ND Council of Educational Leaders (ND CEL), the ND LEAD Center and the Technology Director of the ND Board for Vocational and Technical Education implement the ND Technology Academy for School Leaders (ND TASL). Funding for the TASL professional development sessions for administrators was provided through appropriation to EduTech (CII/Sendit) and funds from a grant from the Bill and Melinda Gates Foundation. A total of 235 school superintendents and building principals from 118 North Dakota school districts participated in ND TASL during 2001-02. A second round of TASL, including 240 administrators begins in late fall 2002. Beginning in December 2002, EduTech (CII/Sendit) will begin "TASL Plus" to bring the TASL professional development experience to over 50 assistant administrators, special education directors and directors of area vocational centers. This second tier of administrators was not included in the funding received from the Gates Foundation, but will be included in training using state funds.

In order to implement videoconferencing in the large number of schools that began using this technology in 2002, EduTech (CII/Sendit) developed and delivered several types of professional development sessions for school personnel. Introductory awareness sessions were held in conjunction with ND IVN staff in 33 locations around the state in 2001-02. Over 800 school administrators, technology coordinators, teachers and board members attended these sessions. EduTech featured video networking as the theme of the March 2002 SEND Conference with over 130 school personnel in attendance. In addition, 74 distance education teachers and administrators representing 45 school districts attended a two-day mini conference, "Teaching at a Distance with Video and Emerging Technologies," put on by EduTech in June 2002. Formal training sessions for teachers and site coordinators began in August

2002 within each consortium. The one-day training session, “Welcome to ITV Land,” was developed by experienced ITV teachers and delivered by EduTech staff in Valley City, Devils Lake, Grafton, Mayville, Kulm, and Bottineau. Over 200 participants attended these sessions.

Beginning in 2001 an EduTech (CII/Sendit) staff person became the state director for Marco Polo technology training for K-12 teachers. Marco Polo, a free service of the WorldCom foundation, provides training for teachers in using Web resources through a comprehensive database of curriculum-specific standards-based lesson plans. Marco Polo training continues to be available to teachers in North Dakota through the leadership of EduTech (CII/Sendit) in spite of the WorldCom foundation’s reorganization after the financial collapse of its parent company in July 2002.

EduTech (CII/Sendit) staff has taken a lead role in the development of the “ND Lewis and Clark Resource Collection.” The resources in the Lewis and Clark collection and related training are designed for teachers to bring the history of the expedition to their classrooms using technology-based learning materials that focus on Lewis and Clark as a common theme across the curriculum, including the core subjects and North Dakota history, cultural perspectives and the arts. Teacher training includes summer institutes, online resources and school-to-school tele-collaborative projects. Other agencies involved in the project include, the State Historical Society, ND Humanities Council, ND Council on the Arts, ND Indian Affairs Commission, ND Lewis & Clark Bicentennial Foundation and Council, National Lewis & Clark Trail Heritage Foundation, ND Teacher Center Network, ND Forest Service, and Washburn Public Schools. This coalition is recognized by the Lewis & Clark Governor’s Advisory Committee as the K12 education component of the bicentennial observance in the state.

Through its eight regional technology staff, EduTech (CII/Sendit) also offer training to serve a variety of school user needs including fundamental technology skills, product creation, curriculum integration and immersion.

EduTech (CII/Sendit) continued its ongoing relationship with the ND Teaching with Technology (TWT) initiative, a federally funded Technology Innovation Challenge Grant. ND TWT offers three phases of professional development in schools to help teachers move toward using technology in transformational ways in the classroom. EduTech (CII/Sendit) staff support TWT efforts serving as content developers and internal evaluators. EduTech (CII/Sendit) regional staff provides skills based and other training sessions that TWT school-based teams identify as needed by staff as part of TWT Phase III. The professional development in Phase II of TWT was offered using BlackBoard, an online course development and delivery application available to schools through a cooperative agreement between EduTech (CII/Sendit) and the ND State University system.

April 2002 ND ETC School Technology Needs Assessment

In April 2002 the ETC conducted a needs assessment in North Dakota schools. Written surveys were sent to 710 administrators, 226 technology coordinators, and 1,936 teachers/library professionals. Respondents were given the choice of filling out and returning a paper survey or doing the survey online. Most chose to use the paper survey: 78% of administrators, 60% of technology coordinators and 84% of teacher/librarians. Overall response rates were 50% for administrators, 48% for technology coordinators and 40% for teacher/librarians.

In general, the needs assessment indicated that the major activities of the ND ETC are known and well received. Video has become a high priority with the K-12 respondents; that can be attributed to the amount of emphasis that has been put on video by ETC, ITD, EduTech, and IVN.

ND STAGEnet. Respondents are satisfied with the telecommunication services provided by the state. On a 1 to 5 scale, teachers rated the stability and reliability of the network at 3.9, administrators, 4.1, and technology coordinators, 4.2. When asked if teachers are using the Internet more this year than last, teachers' overall response was 3.8, administrators - 3.9 and technology coordinators - 4.0. In open-ended responses, teachers said they use the Internet themselves for research (483), curriculum enhancement (200-300 various responses), e-mail (188), purchasing, interlibrary loans and various other uses. Teachers said students use the Internet for research (over 550), class work enhancement (over 100), and e-mail (33).

When asked if the state should continue paying for basic connectivity to schools, administrators overwhelmingly agreed (4.7). Administrators and technology coordinators indicated their school would probably need more bandwidth in the next two or three years.

Video Networking. In summary, schools that use video to share courses now are satisfied with the results. Schools not currently using video indicate they likely will be in the near future. Use of video for meetings, professional development and other non-course purpose is also seen as a high need. Development of a statewide online clearinghouse for online courses was seen as needed (3.9 – 4.1). Teachers are not very interested in becoming video teachers (2.8).

Administrators identified high need video courses as:

1. World languages (68)
2. Advanced math and science (25)
3. College courses (17)
4. Dual credit (9)
5. Professional development (6).

Professional Development. All three groups said the professional development they receive has prepared them to use technology in their professional role (3.3 – 3.5). They receive their professional development from a variety of sources: colleges, C.I.I., STS, TWT, TASL, NDATL and some others. TWT and STS were most frequently cited. Having sessions held in their school and offered for graduate credit were seen as the two most important features of professional development.

Administrators cited the need for technology integration skills as a much higher need than that technology skills (174 to 52), and while teachers agreed (298 to 170), they reported more need for technology skills than did administrators. The respondents offered a long list of technology skill and other workshops topics. This information should be useful to EduTech in developing its plans for the coming year.

In response to open-ended questions, administrators most often reported the need for more funding for in-service time, need for technology training to be combined with standards, and the need for ongoing training. Teachers reported the need for more time to implement technology skills, the need for on-going training and the need for a wide range of training opportunities.

Sendit Technology Services. Sendit e-mail and web-hosting were seen as high value services, but the helpdesk was reported as lower value, particularly among teachers. Respondents think that more applications like PowerSchool, videostreaming, data and warehousing are needed. Those that have received training from STS view it as beneficial, but few reported as having received training from a STS regional representative.

Administrators ranked the top three needs for new services that should be available from the Sendit regional staff as workshops to earn certification, video consulting and technician service calls. Technology coordinators ranked workshops to earn certification, access to network diagnostic tools for troubleshooting network problems, and server administration, as the top three new needs. But overall, respondents said the regional personnel should make available more professional development opportunities and technical support.

Technology Planning and Assessment. Respondents generally reported using a school technology planning process of some kind, but were less sure they had a way of assessing the impact of technology on student learning. The TAGLIT assessment tool used in ND TASL was seen as useful and the need for more assessment tools was cited.

ND Division of Independent Study. Administrators showed interest in using NDIS video courses when they are available. Courses cited as highest needs: world languages, elective courses, core courses, advanced math, advanced science, English and art courses. When asked about the NDIS online courses, administrators cited the need for more information about course availability, the need for low cost as important. Those who reported they had used NDIS services, generally reported satisfaction.

Prairie School Television. Respondents generally did not know if their teachers were using television programs offered by PSTV, but did indicate that when the membership fee is no longer required, their teachers will likely use the service more often. Teachers and librarians provided a long list of programs that were popular with teachers. Most of the comments from all respondents indicated a high need for better communication by PSTV, program listings with content information, study guides and in-service to help teachers better use the service.

Funding of School Technology. Administrators and technology coordinators ranked the “most important” sources of funding for school technology in the following order:

1. District funds and technology levy (207)
2. Grants (129)
3. Federal funds (94)
4. State funds and ETC (75)
5. Other (19)

The major initiatives administrators and technology coordinators reported that they plan to implement in the next two years:

1. Install video classroom (129)
2. Upgrade/add computers/computer lab (74)
3. Staff training (55)
4. Portable computer lab (40)
5. TWT (16)

When asked what other technology initiatives they would implement “if funds were available,” administrators and technology coordinators reported a list similar to what they “plan to implement.” But they did suggest offering more technology related courses and a list of specific professional development topics, administrative needs, software titles, and single-purpose technologies. Other comments by administrators included:

- Need for more and continuous source of technology funding.
- Need for fair distribution of funds (based on per pupil).

2002-05 Goals and Strategies for ND K-12 Education Technology

The K-12 Information Technology Goals and Strategies for 2002 to 2005 are based on the Results Policies established by the ND ETC in May 2002:

1. North Dakota educational technology systems will continuously improve educational opportunities.
 - Decisions related to educational technology will be based on needs assessments
 - Decisions related to educational technology will be data-driven
 - Council will be aware of emerging technologies
 - Council will be aware of emerging education needs
2. Technology systems to enhance educational opportunities will be more efficient, effective and coordinated on a statewide basis.
 - The number of duplicative services will decline annually
 - Reduction in the number of governing entities
 - Increasing number of common educational opportunities provided through partnerships to multiple constituents
 - Reduction in travel costs
 - Increased number of educational technology systems that are deployed on a larger scale than a district-by-district basis
3. Distance education systems will be in place to deliver a comprehensive curriculum to North Dakota students.
 - Increased number of video-conference classrooms
 - Increasing number of units of instruction delivered (core + electives)
 - Increasing numbers of courses that expand local curricular offerings
4. Increased professional development opportunities for North Dakota school staff will be offered and delivered through more efficient means.
 - The number of staff participating in professional development activities relating to the use of educational technology will increase annually
 - The number of traditional training opportunities delivered through educational technology systems will increase annually
 - The number of staff participating in new professional development activities delivered through educational technology systems will increase annually
 - District surveys will indicate increased efficiencies in the delivery of staff development opportunities
5. Policies will be maintained to sustain the stability and integrity of the educational technology systems.
 - Decrease in the number of viruses that bring down the system
 - Decrease in the number of security breaches
 - Maintain 1% or less downtime (planned downtime is included)
 - Maintain a flexible filtering system that complies with E-rate and other federal programs

2002-05 North Dakota Education Technology Strategies

Based on needs assessments, discussions with K-12 leaders, stakeholders and the directors of EduTech and ND Division of Independent Study, new technology strategies have been identified and ongoing strategies will be continued in order to achieve the results of the ND ETC.

ND ETC Results Policy: North Dakota educational technology systems will continuously improve educational opportunities.

2002-05 Strategies:

1. Expand the leadership role of the ND ETC. (ETC budget)
2. Evaluate the effectiveness of technology use in K-12 schools through a systematic assessment process. (EduTech budget)
3. Identify additional web-based applications that meet K-12 customer needs, which can be deployed statewide to create efficiencies. (ETC budget)
4. Support the operation of Prairie School Television (ETC optional budget)
5. Ongoing strategies. (ETC budget)

1. Expand the leadership role of the ND ETC.

The role of the ND ETC will continue to grow in the 2002-2005. The merger and reorganization of CII and STS into EduTech will be completed and a single EduTech budget will be submitted for funding by the 2003 legislative session. ND ETC will research the benefits of common hardware and software configurations for key K-12 LAN and desktop applications. ND ETC will take on the responsibility of approving all school technology plans for state and federal purposes. In addition, ND ETC will work closer with ND DPI and other state agencies on coordination of educational technology and IT systems for K-12 schools.

2. Evaluate the effectiveness of technology use in K-12 schools through a systematic assessment process. As of September 2002 four North Dakota school districts had conducted comprehensive technology assessments. The assessment process was developed over the last three years by EduTech staff in conjunction with the North Central Regional Technology in Education Consortium in Illinois. The process includes surveys of teachers, administrators, students and parents; onsite interviews and observations by external evaluators, and evaluation of student work. EduTech will provide incentives to four or five ND schools in 2002-2003 to complete a comprehensive technology assessment process. Five to six schools per year will be participate in the technology assessment process as part of their school improvement work or as part of evaluation of federally funded technology projects.

3. Identify additional web-based applications that meet K-12 customer needs, which can be deployed statewide to create efficiencies. Based on successful rollout of PowerSchool, other high-need applications will be identified and pilot projects conducted to identify those applications which can be efficiently implemented on a statewide basis with either ND ITD or a third party acting as the statewide application service provider. Results will include increased effectiveness for K-12 schools and cost-savings statewide. Schools using the new services will pay the ongoing costs.

4. Support the operation of Prairie School Television. Based on successful implementation of PSTV programming as a free service to North Dakota Schools, the ND ETC will seek funds to support the operation of PSTV in order to continue it as a free service and to help it expand in scope and usefulness to schools.

5. Ongoing Strategies. ND ETC will continue to support the expanded use of technology in schools through a program of grants to school that focuses on high priority needs. Requiring districts to provide matching funds will continue to be part of the ETC grant programs.

ND ETC Results Policy: Technology systems to enhance educational opportunities will be more efficient, effective and coordinated on a statewide basis.

2002-05 Strategies:

1. Connect every school district to ND STAGEnet. (ITD budget)
2. Implement videoconferencing capabilities and strategies to connect K-12 schools to educational resources outside of the state. (ETC budget) (EduTech budget)
3. Implement a statewide “Web Meeting” application to facilitate K-12 needs for widespread communication involving dozens of end-points. (EduTech budget)
4. Implement K-12 educational projects in cooperation with NDUS, which use Internet2 capabilities such as virtual field trips. (ETC budget) (EduTech budget)
5. Expand the implementation of PowerSchool to every school district that wants to use it as a student information system. (EduTech budget) (ITD budget)
6. Develop and implement a plan for the ND Division of Independent Study to be completely self-supporting by 2010. (NDIS budget)
7. Ongoing strategies. (ETC budget) (EduTech budget)

1. Connect every school district to ND STAGEnet. The state currently connects every public high school district in North Dakota, plus 25 K-8 districts. In 2003, as many of the remaining 16 K-8 and rural districts will be connected to STAGEnet as is practical and cost-effective.

- 2. Implement videoconferencing capabilities and strategies to connect K-12 schools to educational resources outside of the state.** One of the important capabilities that IP video offers is the potential for connections with educational resources outside of the state. These resources include museums, interpretive centers and national education resources such as NASA. In order to implement the use of these resources by ND K-12 teachers and students, new policies and procedures must be developed by ND IVN and ITD. Training of school video coordinators and teachers will be necessary to ensure appropriate use and success.
- 3. Implement a statewide “Web Collaboration” application to facilitate K-12 needs for widespread communication involving dozens of end-points.** Increasing need is identified for a web-based capability to meet with multiple users in multiple sites across the state. These types of meetings are not practical using standard multi-point videoconferencing because of the technical limitations of the switching/scheduling infrastructure and the practical limitations of communicating effectively with dozens of end-points. Implementation of a web-meeting application that uses a phone bridge for audio communication and a web-based meeting site for visual communication will better meet the requirements for some of these large online meetings. Meetings and in-service sessions of the EduTech, NDATL and DPI are potential initial users.
- 4. Implement K-12 educational projects in cooperation with NDUS, which use Internet2 capabilities.** Internet2 provides potential for K-12 teachers and students to participate in new educational experiences that require higher capacity than the traditional Internet. Examples include access to specialized research equipment and worldwide multipoint videoconferencing. Participation in Internet2 by ND K-12 schools requires an annual membership fee to be paid by the ND ETC and access to network capabilities made possible by ND ITD, as well as coordination and training by EduTech staff.
- 5. Expand the implementation of PowerSchool to every school district that wants to use it as a student information system.** By October 2003 up to 50 school districts will be using PowerSchool SIS as their student information system. This version of PowerSchool is web-based and is supported statewide by ND ITD. Based on initial success, it is expected that an additional 50 schools may implement PowerSchool. Implementation of PowerSchool will also facilitate any reorganization plans resulting from legislative action.
- 6. Develop and Implement a plan for the ND Division of Independent Study to be completely self-supporting by 2010.** The director and staff of the NDIS, in consultation with the director of the ND ETC, will develop a plan to make NDIS self-supporting by 2010. This will eliminate the need for the general fund appropriation that NDIS now relies on to cover about 17% of its total budget.

7. Ongoing Strategies. The ND ETC will continue to improve its organizational structure and operation as a governance board, and continue to fund the director's position to implement the work of the ETC. ETC will continue to lead the state's E-rate application and state educational technology planning processes. EduTech will be funded as a single organization through a single memorandum of understanding with NDSU and continue a limited relationship with VCSU. EduTech will continue to provide schools with traditional IT services such as e-mail, web hosting and help desk, as well as coordinating state buys on educational software and supporting statewide applications such as BlackBoard for enhancing face-to-face instruction and video delivered instruction, and as a stand-alone delivery method for completely web-based courses.

ND ETC Results Policy: Distance education systems will be in place to deliver a comprehensive curriculum to North Dakota students.

2002-05 Strategies:

1. Support the implementation of videoconferencing in schools that need video to share courses. (ETC budget)
2. Support the implementation of IP videoconference capabilities in at least one site in every ND school district. (ETC optional budget)
3. Develop educational resources and activities based on the Lewis and Clark theme in cooperation with other state agencies. (EduTech optional budget)
4. Develop a distance education clearinghouse site for K-12 high school and advanced placement courses. (NDIS optional budget)
5. Ongoing strategies. (ETC budget) (EduTech budget) (NDIS budget)

1. Support the implementation of videoconferencing in schools that need video to share courses. Although state and federal grant funds provided up to \$20,000 in support to North Dakota schools in 2002 for implementing video networking capabilities, not all schools that applied for grants were able to be funded. Twenty schools with no current videoconferencing capabilities will be funded to support implementation of video in 2003. An additional 25 schools will be funded by ETC grants to add IP video capabilities to already existing video networks.

2. Support the implementation of IP videoconference capabilities in at least one site in every ND school district. Beyond the use of video networking for sharing of secondary coursework in schools, video is increasingly becoming an important tool for administrative meetings, statewide professional development and intra-consortium planning, for example, by curriculum committees. To ensure that all schools have capabilities to use video for these purposes, 35 sites will be funded for adding IP video conferencing capabilities in 2003.

3. Develop educational resources and activities based on the Lewis and Clark theme in cooperation with other state agencies. This project will develop a comprehensive and easily accessible collection of classroom resources and professional development to bring the history of the Lewis and Clark Expedition to K-12 teachers and students. Distance learning opportunities will be developed and implemented for teachers and students in all parts of the state.

4. Develop a distance education clearinghouse site for K-12 high school and advanced placement courses. With the increasing number of high school, advanced placement and dual-credit courses available online, a statewide web-based clearinghouse of K-12 course offerings will be developed in 2003. All schools that have courses available for use by students outside of their video consortiums will post those offerings with course and contact information available to others who may be interested.

5. Ongoing Strategies. The ND Division of Independent Study will continue to expand distance education opportunities for North Dakota students through traditional, web-based and video delivery of courses for middle and high-school students. EduTech will provide ongoing support for video consortiums that share courses and other resources using video networking, and continue supporting use of web course development and delivery tools for K-12 teachers.

ND ETC Results Policy: Increased professional development opportunities for ND school staff will be offered and delivered through more efficient means.

2002-05 Strategies:

1. Implement the use of IP video and web delivery for professional development opportunities for K-12 educators. (EduTech budget)
2. Ongoing strategies. (ETC budget) (EduTech budget)

1. Implement the use of IP video and web delivery for professional development opportunities for K-12 educators. EduTech will develop and deliver new professional development opportunities for ND educators using video networking and web delivery in order to bring those opportunities to all educators in all schools no matter where they are located. A variety of opportunities will provide flexibility for educators in terms of time, place and frequency of training opportunities.

2. Ongoing strategies. Professional development opportunities developed by EduTech will continue to be delivered to schools by EduTech lead staff and regional support personnel. Training for administrators, technology coordinators and distance education teachers will continue to be focused on applications to engage all educators in practices that allow them to be more efficient and effective in classroom management and instruction. Teacher training will include both basic technology skills and advanced curriculum integration sessions based on authentic classroom activities. EduTech will continue to expand its range of professional development offerings based on needs of schools, for example to emerging need for new training for schools on Internet Safety.

ND ETC Results Policy: Policies will be maintained to sustain the stability and integrity of the educational technology systems.

2002-05 Strategies:

1. Implement statewide virus protection in every K-12 school connected to STAGEnet to ensure the stability of the shared infrastructure. (EduTech optional budget)
 2. Ongoing strategies. (ETC budget) (EduTech budget)
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1. **Implement statewide virus protection in every K-12 school connected to STAGEnet to ensure the stability of the shared infrastructure.** In order to maintain STAGEnet as a stable and reliable tool for instruction and administration of North Dakota K-12 schools, a statewide virus protection plan will be in place to protect all connected school computers. The number of computers protected through the Norton Anti-Virus statewide contract will be increased. EduTech will budget for the statewide contract and maintain the required hardware and software. Those schools not participating in the anti-virus plan administered by EduTech will certify to EduTech that they have their own virus-protection plan that meets EduTech standards.
 2. **Ongoing Strategies.** ND ETC will continue to update its policies and practices in order to ensure technology systems are reliable for K-12 mission-critical functions. EduTech will continue to work with ND ITD on issues of risk management and security of network-based resources made available to schools. EduTech will continue to support statewide Internet filtering for K-12 schools to ensure CIPA compliance for local and state E-Rate applications and to ensure the filtering system meets the need of all K-12 educators and students. Because Internet filtering is required by most federal programs and is also an important instructional management tool for schools, a statewide Internet filtering system will continue to be maintained as part of schools' connectivity to STAGEnet. EduTech will continue to manage the filtering system for all schools statewide. Helpdesk services will continue to be coordinated with ITD and ND IVN in order to ensure seamless coverage across the variety of technology systems now in place.